disease prevention news

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IDEAS: Outbreak Investigations in 1994

The Infectious Disease Epidemiology and Surveillance Division (IDEAS) of the Texas Department of Health (TDH) completed 35 of 37 outbreak investigations initiated in 1994. Most investigations were done in concerted effort with local and regional health departments, the TDH laboratory, and, at times, the Centers for Disease Control and Prevention (CDC). Outbreaks were primarily foodborne (56%) or airborne (14%). Others were a result of direct or close contact with a disease causing organism (8%), a combination of foodborne and direct contact (12%), bloodborne (5%), psychosomatic (2%), and vector-borne (1%). The majority of the investigations involved outbreaks of gastroenteritis, such as salmonellosis and shigellosis. Outbreak settings included small communities, hospitals, daycare centers, restaurants, hotels, and caves.

Most outbreaks are reported by local health departments, hospitals, physicians, other states, or by CDC. Some are identified through laboratory-based surveillance. A local hospital in Webb County, for instance, reported an unusual rise in the number of **listeriosis** cases. As a result, a case-control study was begun to determine a common source for five cases reported in Laredo from December 17, 1993 through January 29, 1994. The study showed that individuals who had eaten cauliflower during the month prior to their illness were 33 times more likely to be ill than those who had not. Most had eaten frozen vegetable mixes from grocery stores. Packages of the vegetable mix were collected and submitted for laboratory analysis; *Listeria monocytogenes* was identified in seven samples of frozen, mixed vegetables collected in Laredo and San Antonio. Pulsed field gel electropheresis (PFGE) results showed one of the food isolates to be indistinguishable from case isolates.

In October, the Minnesota Department of Health notified IDEAS of a nationwide outbreak involving ***Salmonella enteritidis***-contaminated home-delivered icecream (*DPN*, Vol. 54, No. 25). Upon further investigation, TDH discovered 155 salmonellosis cases related to this outbreak. CDC notified TDH of three people, each from separate states, who contracted **Legionnaire's disease** in August; all three had stayed in the same San Antonio hotel about ten days before onset of illness. Legionellosis is an acute bacterial disease caused by *Legionella pneumophila*. People become ill after breathing aerosolized water droplets contaminated with the bacteria. Hot tubs, shower heads, water faucets, air conditioning systems, water cooling towers, and hot water heaters have all been implicated as sources of infection in outbreaks. An investigation by the San Antonio Metropolitan Health District and IDEAS linked the outbreak with contaminated showerheads and faucets in the hotel rooms. Decontamination efforts were then taken to prevent further infections.

A Tarrant County physician's report of a cluster of three HUS cases that occurred between October 1993 and January 1994 was investigated even though **hemolytic uremic syndrome (HUS)** and ***Escherichia coli* O157:H7** infections did not become officially reportable conditions in Texas until February 1994. The three patients were all 3 years old; two were girls and one was a boy. There was one fatality, and two patients had culture-confirmed *E. coli* O157:H7 infections. TDH issued a notice requesting immediate reports of all culture-

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confirmed *E. coli* O157:H7 infections and HUS cases to determine whether this outbreak had a common source and to search for similar, unreported cases. Ten cases with two deaths were reported. Seven of the ten patients had HUS; all ten had posive cultures for *E. coli* O157:H7. Ages ranged from 21 months to 71 years. Six of the patients were female, four were male. Either the patient or a family member was interviewed to determine if a common source for the cases could be identified. Although each patient had a history of eating ground beef in the seven-day period prior to the onset of symptoms, PFGE analysis showed that the isolates were different and that there was no common source.

Several notable respiratory outbreaks occurred in 1994. During the first months of the year, a Texas Department of Criminal Justice (TDCJ) facility in East Texas experienced the largest **tuberculosis** (TB) outbreak recorded for a Texas prison. Fifteen cases of pulmonary TB and 109 PPD (Mantoux purified protein derivative) skin test converters were identified between April 5 and September 30, 1994. Most of the exposure during this outbreak occurred between January 1 and June 30, 1994. All cases occurred among inmates and employees assigned to the Mentally Retarded Offenders Program (MROP) within the TDCJ system. Two hundred thirty inmates were enrolled in a case-control study to determine risk factors for both TB infection and progression to TB disease. The most significant risk factor associated with infection and pulmonary disease in this outbreak was living or working in the D Wing in prison A. This wing housed a population of inmates with mental illness and/or other psychological problems along with mental retardation.

Outbreaks of **meningococcal infection** occurred from January through May in Gregg and Rusk Counties. In Rusk County there were six reported cases with no fatalities. Gregg County also reported six cases and had one fatality. All of the patients in Gregg County, who ranged in age from 2 to 50 years, had group C *Neisseria meningitidis* isolated from their blood or spinal fluid. The rate of meningococcal infection for the general population of Gregg County during December, January, and early February was 4.6 cases per 100,000 people. The rate for children under the age of 10 years was significantly higher at 19.2 cases per 100,000. Since vaccination campaigns should be considered when the rate of infection in a specific population rises above 10 cases per 100,000 population, meningococcal vaccine was provided to children aged 2 years to 9 years. During nine clinics held at five sites, 10,416 doses were administered at a total cost of $107,360. The state provided the vaccine at no cost, although donations were encouraged. In Rusk County, the rate of infection for children aged 2 years to 9 years was also above 10 cases per 100,000. In a separate vaccination campaign, 1,505 doses were administered at a total cost of $18,070.

A number of zoonotic disease case investigations were also conducted in 1994. In February, one of three people studying rattlesnakes in a Bell County cave contracted **tick-borne relapsing fever** (TBRF). After an incubation period of nine days, the patient had onset of fever, headache, chills, night sweats, leg and back pain, nausea, and severe fatigue. He had four relapses, after which his illness resolved without antibiotic therapy. Spirochetes were detected retrospectively in a blood smear collected 15 days after onset of illness. In an unrelated June incident, two cave biologists also contracted TBRF, while surveying a Travis County cave (*DPN*, Vol. 54, No. 17).

Three cases of locally acquired *Plasmodium vivax* **malaria** occurred in Houston. Two cases were reported in July and a third in December. The third patient was most likely infected in August and diagnosed four months later after having a relapse. The two index patients had neither travel history nor other risk factors associated with malaria. The patients lived miles apart and had no common exposure.

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An environmental investigation was conducted to determine whether anopheline mosquito vectors and breeding sites were present in the case-patient neighborhoods. *Anopheles quadrimaculatus* mosquitos and potential breeding sites were found near both patients' homes. In an attempt to identify all cases of malaria diagnosed in the Houston area from June 1 to August 22, TDH conducted active surveillance of all area hospitals, laboratories, and infectious disease specialists. Twenty-one additional cases of malaria were identified. Only four of these cases (19%) had already been reported to TDH.

Infectious zoonotic diseases caused only two deaths in 1994. A thirteen-year-old boy from Webb County died from **primary amebic meningoencephalitis** after swimming in a settling pond in July (*DPN*, Vol. 54, No. 18). A fourteen-year-old boy from Edinburg died after contracting rabies from the Texas Fox/Mexican Dog virus strain in November (*DPN*, Vol. 54, No. 25).

Efforts in 1994 to control and prevent infectious disease in this state were not limited to outbreak investigations.

In support of the TDH mission to protect and promote the health of the citizens of Texas, the IDEAS division also

- Responded to over 13,000 individual case reports and 3,800 telephone inquiries
- Educated health professionals and the general public about public health issues through scientific presentations, published articles, andbrochures
- Created a uniform card listing all reportable diseases and developed a telephone reporting system that will enhance disease surveillance throug himproved case investigation and intervention (*DPN*, Vol 55, No. 17)

For further information call the IDEAS Division at (512) 458-7676.

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Flea-borne Typhus

With this year's much higher than average flea population came an increase in the number of reported cases of flea-borne typhus. Compared with nine confirmed cases for all of 1994, 18 cases had been confirmed by the end of July 1995.

As usual, most cases occurred in South Texas. The 27 patients diagnosed since January 1994 resided in the following counties: Hidalgo (13); Nueces (8); Brooks, Cameron, Nolan, San Patricio, Smith, and Starr (1 each). At least 13 patients had known exposure to fleas. When asked what animals were present in their environments, patients listed opossums, rodents, and cats.

Nineteen patients were male and eight were female; their ages ranged from 6 to 82 years. Onsets of illness occurred in January (4), February (3), March (2), April (1), May (2), June (4), July (6), October (2), November (2), and December (1). Symptoms included fever (100%), nausea/vomiting (78%), headache (78%), malaise (67%), myalgia (48%), and anorexia (52%). Three (11%) persons had pneumonitis and 11 (41%) a rash. All but three patients were hospitalized and none died.

To report flea-borne typhus, call (800) 705-8868.

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Outbreak Investigations

Disease	Agent	Month
Hemolytic uremic syndrome	*Escherichia coli* O157:H7	January (began October 1993)
Listeriosis	*Listeria monocytogenes*	January
Tuberculosis	*Mycobacterium tuberculosis*	January-April
Meningococcal infection	*Neisseria meningitidis*	January-April
Meningococcal infection	*Neisseria meningitidis*	January-May
Shigellosis	*Shigella* species	February
Bacterial conjunctivitis	Unknown	February
Tick-borne relapsing fever	*Borrelia turicatae*	February
Gastroenteritis	Unknown	March-April
Salmonellosis	*Salmonella* species	April
Botulism	*Clostridium botulinum*	April
Pneumonia	Unknown	April-May
Malaria, transfusion-acquired	*Plasmodium falciparum*	April-May
Hepatitis B	Hepatitis B virus	May
Respiratory illness	Unknown	May
Gastroenteritis	None	May
Gastroenteritis	Unknown	May
Gastroenteritis	*Clostridium perfringens*	June
Shigellosis	*Shigella sonnei*	June
Pruritic rash	Delusionary psychosis	June
Tick-borne relapsing fever	*Borrelia turicatae*	June
Gastroenteritis	Unknown	July
Gastroenteritis	Norwalk-like virus	July
Febrile pharyngitis	*Streptococcus equisimilis*	July
Malaria, indigenous	*Plasmodium vivax*	July-August
Gastroenteritis	*Bacillus cereus*	August
Amebic meningoencephalitis	*Naegleria fowlerii*	August
Legionnaire's disease	*Legionella pneumophila*	August
Shigellosis	*Shigella sonnei*	September-October
Gastroenteritis	*Escherichia coli* O157 :H7	September-October
Hepatitis A	Hepatitis A virus	October
Gastroenteritis	Unknown	October
Salmonellosis	*Salmonella enteritidis*	October-December
Salmonellosis	*Salmonella* species	November
Gastroenteritis	Norwalk-like virus	November
Rabies	Texas fox/Mexican dog rabies virus strain	November
Hepatitis C	Hepatitis C virus	December

by Month in 1994

County	Setting	Route	# Ill / # Exposed
Tarrant, Jones, Runnells, Erath	Community	Direct Contact/Foodborne	10
Webb	Community	Foodborne	7
Anderson	Prison	Airborne	120 infected (15 developed active TB)
Gregg	Community	Close contact	6 (3 died)
Rusk	Community	Close contact	6
Guadalupe	Day care center	Direct contact	4
Bexar	Rehabilitation hospital	Direct contact	5 / 12
Bell	Cave	Tick-borne	1 / 3
Limestone	Restauraunt	Foodborne	14
El Paso	Restaurant	Foodborne	7
El Paso	Restaurant	Foodborne	24 (0 deaths)
Denton, Erath, Wise, Johnson	Community	Airborne	5
Harris	Hospital (bypass surgery)	Bloodborne	1
Harris	Free standing dialysis unit	Bloodborne	14 / 20
Lubbock	Facility for disabled persons	Airborne	8
Lubbock	Band jamboree	Psychosomatic	41 / 870
Culberson	High school sports banquet	Foodborne	64 / 240
Burnet	Restaurant	Foodborne	20
Howard	Community	Direct contact	50+
Bexar	Business supply store	Psychosomatic	3
Travis	Cave	Tick-borne	2
Harris	Hotel	Foodborne	112
Kerr	Church camp	Direct contact/foodborne	55
Nationwide	Exotic animal handlers	Direct contact with jerboas	22
Harris	Community	Mosquito-borne	3
El Paso	Elementary school	Foodborne	49 / 855
Webb	Settling pond	Waterborne	1
Bexar	Hotel	Airborne	3
Bell	Community	Direct contact/foodborne	50
McLennan	University cafeteria	Foodborne	26
Kerr	Community	Foodborne	18
Travis	Catered lunch	Foodborne	8 / 12
Nationwide	Community	Foodborne	155 (4163 nationwide)
Hill	Thanksgiving dinner	Foodborne	19 / 24
Travis	Hotel	Foodborne	30 / 80
Hidalgo	Unknown	Unknown	1 (died)
Tarrant	Ambulatory surgical center	Bloodborne	30 antibody positive

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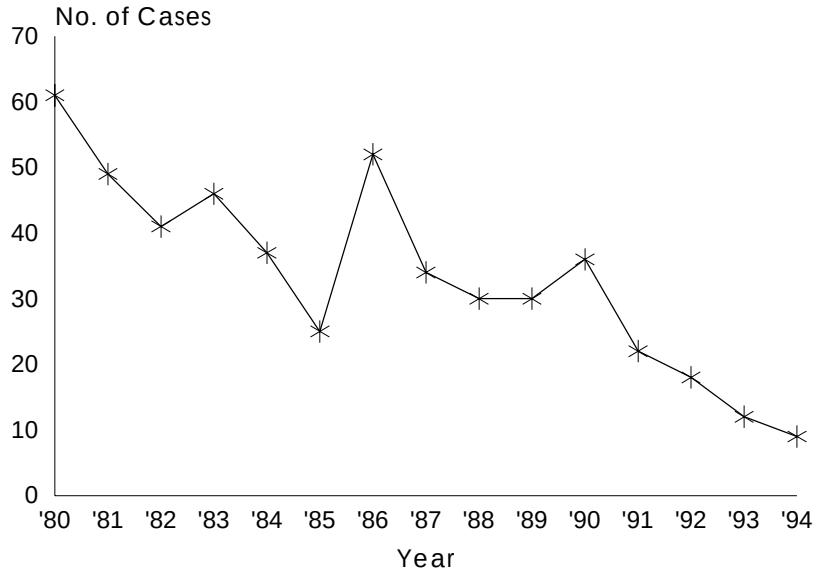
(***Typhus**, continued from page 3)*

Prevalent worldwide, flea-borne (murine or endemic) typhus is caused by *Rickettsia typhi* and by *Rickettsia azadii (*a proposed new species formerly known as ELB agent). Thousands of cases occur-red annually in the US during the first half of the century - primarily in Texas, Louisiana, Mississippi, Alabama, Georgia, Florida, North Carolina, and South Carolina. From 1942 through 1946, greater than 1000 cases per year were reported in Texas alone. The US Public Health Service's concentrated effort to control rats subsequently diminished the number of cases. Currently, most cases occur in Texas, California, and Hawaii.

Weil-Felix test results are not acceptable for typhus confirmation.

Reported Cases of Murine Typhus Fever, Texas: 1980-1994



The principal vector of *R. typhi* is *Xenop-sylla cheopis* (Oriental rat flea). The primary reservoirs are rodents such as *Rat-tus rattus* and *Rattus norvegicus. R. typhi* and *R. azadii* have been detected in both opossums and cat fleas (*Ctenocephalides felis*) in southern California and in South Texas. Opossums have been implicated as secondary hosts. As with most zoonoses, humans are accidental hosts.

Knowledge of the transmission cycle is necessary to prevent human cases. Since fleas are directly responsible for human disease, initial efforts should focus on flea control where cases occur. Rodent elimination should follow.

Human disease generally occurs when rickettsia contaminate a flea bite, skin abrasion, or the conjunctiva. After an incubation period of 5 to 14 days, there is an abrupt onset of fever accompanied by persistent headache, chills, malaise, and myalgia. Approximately 60% of patients develop a macular rash that is initially confined to the central aspects of the trunk. Other symptoms include nausea and vomiting, abdominal pain, pneumo-nitis, conjunctivitis, splenomegaly, and hepatomegaly. Stupor, delirium, and coma rarely occur. Prior to use of broad-spectrum antibiotics, about 5% of cases were fatal; since then, fatality rates have dropped to 1% or less. Tetracycline, doxycycline, or chloramphenicol are the recommended antibiotics for treatment.

Laboratory methods for diagnosis of flea-borne typhus include immunofluorescence microscopy using fluorescein-conjugated *R. typhi* antibody to detect rickettsia in biopsies of skin lesions or in autopsy specimens; polymerase chain reaction (PCR) analysis to detect rickettsia in the blood of acutely ill patients; and serologic tests (eg, immunofluorescence antibody test [IFA] and enzyme immunoassay [EFA]) that detect specific antibody in patient sera. Of these, serologic tests are most commonly used. Immunoglo-bulin (Ig) M antibody may appear as early as a week after onset of illness;IgG antibody generally is not detected until the second or third week.

Unfortunately, the Weil-Felix (*Proteus* agglutination) test is still used for typhus diagnosis. This test, based on a cross-reaction between strains of *Proteus vulgaris* and *R. typhi,* is not reliable for confirmation of typhus infection.

All suspect cases of flea-borne typhus must be reported to the Texas Department of Health (TDH). Specific serologic procedures (eg, IFA and EIA) that incorporate typhus group rickettsiae as an

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antigen provide acceptable confirmation results. Weil-Felix test results are not acceptable for typhus confirmation.

The TDH Laboratory offers a single serum or paired sera IFA test for the serodiagnosis of flea-borne typhus. Testing, performed twice a week, costs $13 per test. Serum should be drawn in a red top tube and mailed at ambient temperature to the following address:

Texas Department of Health Laboratory
1100 W. 49th Street
Austin, TX 78756

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Vaccine Preventable Disease Update
Confirmed cases with onset from 7/1/95-8/31/95

Condition	County	Number of cases	Date of Onset	Condition	County	Number of cases	Date of Onset
Measles	Andrews	1	8/1	Pertussis	Cherokee	2	7/17
		1	8/18		Hidalgo	1	
		1	8/23		Bexar	2	7/19
					Cherokee	1	
Pertussis	Bowie	1	7/1		Harris	1	
	Ochiltree	1			Tarrant	1	
	Van Zandt	1			Nueces	1	7/22
	Bowie	1	7/3		Brazos	1	7/23
	San Augustine	1			Denton	1	7/24
	Travis	1			San Augustine	1	
	Runnels	1	7/4		Milam	1	7/28
	Tarrant	1	7/5		Tarrant	1	
	Bexar	1	7/7		Taylor	2	
	Brazos	1			Randall	1	7/31
	Harris	1			Bexar	1	8/1
	Hidalgo	1			Henderson	2	
	Montgomery	1			Smith	2	
	Tarrant	1			Van Zandt	2	
	Denton	1	7/8		Nueces	1	8/2
	Bexar	2	7/10		Wood	1	
	Harris	1			Jones	1	8/3
	Medina	1			Bexar	1	8/4
	Bexar	1	7/11		Bexar	1	8/7
	San Augustine	1			Bexar	2	8/10
	Smith	1			Smith	1	
	Travis	1			Johnson	1	8/12
	Rusk	1	7/14		Henderson	1	8/13
	Smith	1			Ellis	1	8/15
	Cherokee	2	7/15		Harris	1	
	Orange	2			Henderson	1	8/16
	Smith	1			El Paso	1	8/24
	Nueces	1	7/16				

YTD	Measles	Rubella	Pertussis
	3	7	146

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http://www.tdh.state.tx.us/phpep/dpnhome.htm
TDH Healthy Texans BBS: (800) 858-5833

Dengue Threatens Texas

Dengue fever is a mosquito-borne viral illness characterized by sudden onset, high fever, severe headaches, joint and muscle pain, nausea, vomiting, and rash. More serious symptoms occur with dengue hemorrhagic fever or dengue shock syndrome. *Aedes aegypti* and *Aedes albopictus*, proven dengue virus vectors, are present throughout most of Texas.

Dengue was once endemic in Texas, and locally acquired cases occurred in this state as recently as 1980 and 1986. Since 1994, outbreaks of dengue have occurred in Brazil, Costa Rica, the Dominican Republic, Haiti, Nicaragua, Panama, Puerto Rico, Venezuela, and Mexico. (See *DPN* Vol.55 No.15, July 24, 1994, for information on the basic characteristics of this disease and its historic presence in Texas.)

On August 25, the Texas Department of Health (TDH) was notified of a dengue outbreak in Reynosa, Mexico, approximately ten miles from McAllen, TX. The proximity of this outbreak greatly increases the likelihood of both imported and endemic cases in Texas.

Funds immediately were allocated to fight the threat of this ongoing outbreak in Reynosa spreading to Texas. TDH has responded as follows:

- FAXed a dengue alert to all local health departments, infection control practitioners, and infectious disease physicians in South Texas
- Issued a press release regarding TDH activities and how to avoid exposure to mosquitoes
- Visited all the emergency rooms in the hospitals in Cameron and Hidalgo Counties
- Publicized the availability of viral isolation and serologic testing through the TDH Laboratory
- Developed and distributed 6,000 posters and 200,000 pamphlets (bilingual) on dengue prevention
- Distributed 13,000 informational packets to primary care and emergency room physicians statewide
- Expanded the number of species and total number of mosquitoes to be collected for surveillance

As of October 6, the TDH Laboratory had processed 126 specimens, including 12 paired sera, for dengue testing. Eleven cases are confirmed so far from the following counties: Dallas (2), Fort Bend (2), Harris (3), Hays, (1) Hidalgo (2), and Tarrant (1). There are at least 10 additional suspect cases in Texas. Every confirmed case has a travel history to an area outside the US that is epidemic for dengue.

For further information call IDEAS at (512) 458-7676.